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Constraining top-Z couplings through $t\bar{t}+Z$ production at the LHC

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The LHC has observed top-pair production in association with electroweak gauge bosons in the 7 TeV dataset, with many more events expected at the higher energy and luminosity run. This allows the EW interactions of the top, previously only constrained indirectly, to be investigated directly. I will present a calculation of $t\bar{t}+Z$ production to NLO in QCD, including decays of the top and Z boson in the narrow-width approximation, and retaining all spin correlations. Using this calculation, I will put constraints on the top-Z coupling from the measured CMS 7 TeV cross-section. Using the opening angle of the leptons arising from the Z decay, I will consider future constraints from the 13 TeV LHC run. In both cases, the lower scale uncertainty and reasonably large k-factor associated with the NLO predictions allows greater sensitivity to the top-Z couplings.

Summary

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